- Stars
  - characteristics
    - brightness
      - apparent
        - is brightness from Earth
        - two systems:
          - luminosity
            - compares to the Sun
          - magnitude
            - bigger number is fainter
            - negative mag very bright
      - absolute
        - is brightness from standard distance
        - standard distance is 32 ly
          - this means our own sun is dim on this scal
    - spectral class (colour)
      - "brown"
        - failed stars, no fusion, < 0.075 solar masses
      - red
        - cool, red giant or dwar
        - class M
      - orange, yellow
        - dwarf/main seq
        - our sun is example
      - blue, white
        - hotter than sun
        - white dwarf or main seq
      - ultraviolet
        - extremely hot, short lived
  - Position on the HR diagram
    - changes through life
      - protostar
      - most stars go to Main Sequence
      - very low mass = brown dwarf
      - very high mass straight to supergiant
      - end MS when run out of H
    - red giant
  - characteristics of planet systems
    - mass
    - rock, ice, gas
    - distance from primary
    - satellites
  - stages in the birth, life, death
    - starts as GMC
    - gravity causes clumps
    - clumps collapse to disk
    - forms protostar/T-tauri
    - what happens next depends on mass
      - low mass
      - very high mass
      - form iron core
      - when reaches 1.4 MS supernova
        - if < 12 MS = neutron star
        - black hole
  - formation of planets